

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

RECEIVED

DEC 19 1994

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of:)
)
Allocation of Spectrum Below)
5 GHz Transferred from)
Federal Government Use)
)
)

ET Docket No. 94-32

TO: The Commission

DOCKET FILE COPY ORIGINAL

COMMENTS OF COMPAQ COMPUTER CORPORATION

Joseph A. Tasker, Jr., Esq.
Director, Federal Regulatory Affairs
Compaq Computer Corporation
1300 I Street, N.W., 490 East
Washington, DC 20005

Of Counsel:

Ian D. Volner
William Coston
Venable
1201 New York Avenue, N.W., Suite 1000
Washington, DC 20005

Dated: December 19, 1994

No. of Copies rec'd
List A B C D E

029

TABLE OF CONTENTS

	<u>Page</u>
Summary of Position.....	1
Allocation of 2390-2400 MHz for Unlicensed PCS and Reservation of 2402-2417 MHz for Part 15 Uses is the Best and Most Valued Use of this Spectrum	2
A. The Development of Data PCS at 2390-2400 MHz, and Preservation of 2402-2417 for Wireless LANs Will Further the Realization of the N11.....	3
1. <u>The Spectrum Under Consideration is Well Suited for Use by Data-PCS.....</u>	3
2. <u>Data-PCS Will Yield Enormous Benefits to the Public and the Economy.</u>	5
B. The Allocation of 2390-2400 for Data-PCS and the Preservation of 2402-2417 for ISM ISM Applications is Superior to the Alternatives Before the Commission.....	8
1. <u>The Wireless Local Loop Proposal.....</u>	9
2. <u>AAVS.....</u>	10
The Exclusion of Spectrum at 2390-2400 and 2402-2417 from Auction is Entirely Consonant with the Public Interest.....	12

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

RECEIVED
DEC 19 1994
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of:)
)
Allocation of Spectrum Below)
5 GHz Transferred from)
Federal Government Use)
)
_____)

ET Docket No. 94-32

TO: The Commission

COMMENTS OF COMPAQ COMPUTER CORPORATION

Compaq Computer Corporation ("Compaq") submits these comments to urge that the Commission allocate the 2390-2400 MHz band for unlicensed Data-PCS uses and retain the 2402-2417 MHz band for use by ISM equipment, including wireless local area networks. The Notice of Proposed Rulemaking in this proceeding, which grows out of the reallocation of spectrum from the Federal Government to private sector use under the Omnibus Budget Reconciliation Act of 1993 ("Reconciliation Act"), itself suggests the outcome that we and our competitors in the computer industry advocate.

Summary of Position

As a leading manufacturer of computers and computing equipment, including truly nomadic data devices, Compaq has been actively involved in the Commission's ongoing efforts to provide adequate spectrum for what has become to be known as unlicensed Data-PCS or Data-PCS. This proceeding affords the Commission the vehicle to accomplish that goal. In these Comments, we show that the spectrum at

2390-2400 should be reserved for the exclusive use of this emerging technology and that the spectrum at 2402-2417 MHz should be preserved for Part 15 application because these allocations are well suited for the intended uses, and will permit the deployment of new technology, thus creating new jobs, fostering economic growth and improving access to communications by industry and the American public. We further show that the allocations we endorse are markedly superior to any of the alternatives under consideration in terms of these fundamental objectives. Lastly, we show that the proposal we support appropriately balances the public interest values of restricting use of some parts of the spectrum for licensing through auctions while retaining other portions of the spectrum for use on an unlicensed basis as a public good.

**Allocation of 2390-2400 MHz for Unlicensed
PCS and Reservation of 2402-2417
MHz for Part 15 Uses is the Best and Most
Valued Use of this Spectrum.**

The Commission has quite correctly made clear that its fundamental goal in this proceeding is “to ensure that the spectrum, released by the Federal Government, is put to its best and most valued use and that the greatest benefit to the public is attained.” In re Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, ET Docket 94-32 at ¶ 8 (released Nov. 8, 1994) (“NPRM”). This standard necessarily requires that possible uses of the spectrum be considered on their own terms and in comparison with the alternatives. We first discuss why, on its own terms, the allocation of 2390-2400 to Data-PCS and the interrelated preservation of 2402-2417 for Part 15 uses serves the public interest. We then compare this proposal to the alternative allocations

that have been advanced, and show that each of the alternatives is inferior to the allocations we urge.

A. The Development of Data-PCS at 2390-2400 MHz,
and Preservation of 2402-2417 MHz for Wireless LANs
Will Further the Realization of the NII.

That there is a clear need for additional spectrum for use, on an unlicensed basis, by nomadic data devices does not require extensive demonstration. The Commission itself has acknowledged this need in its original allocation of 20 MHz of spectrum for wireless, unlicensed data communications^{1/} and in its subsequent decision, on reconsideration of the PCS order, to reduce this allocation to 10 MHz of spectrum (at 1910-1920 MHz).^{2/} Indeed, the Commission has, in the NPRM in this proceeding, reemphasized this need: acknowledging that it has “made a commitment” to find additional spectrum for Data-PCS, the Commission has specifically proposed the allocation of 2390-2400 MHz for this purpose. NPRM at ¶ 14.

The Commission was correct to raise this possible allocation for two basic reasons. First, 2390-2400 is well suited for the purposes to which Data-PCS will be put. Second, the earliest possible deployment of this technology will promptly translate into benefits to the American economy and the American public.

1. The Spectrum Under Consideration is Well Suited for Use by Data-PCS. An indispensable condition to the initiation of Data-PCS service is that it be

^{1/} See, e.g., Notice of Proposed Rulemaking in Docket 90-314, 7 F.C.C. Rcd. 5676, 5693 (1993).

^{2/} See, Amendment of the Commission's Rules to Establish New Personal Communications Services, 9 FCC Rcd. 4957, 4991 (1994).

permitted to operate in spectrum which is easily cleared or entirely clear. These devices are truly nomadic, designed to permit users access to information wherever they may be - at home, at work, in a classroom, a library or on travel. As a result, Data-PCS devices are marketable only if the spectrum allocated for the use is clear on a nationwide basis. The spectrum at 2390-2400 meets this criterion. Although the spectrum is presently allocated on a secondary basis for certain specialized amateur radio use, the record confirms that the existing use is extremely light and that these specialized amateur uses--if they further develop--can be accommodated elsewhere in the 2400-2500 MHz portion of the band.^{3/} Thus, Data-PCS can be permitted exclusive use of this spectrum without "excessive disruption" of "existing use" in the amateur service, as the Reconciliation Act stipulates. Reconciliation Act, Title VI, Section 113(c)(1)(C)(iii).

A related condition to the successful deployment of Data-PCS is that it be in reasonable proximity to other services with which it will interact. The allocation at 1910-1920 MHz for Data-PCS was chosen because of its proximity to licensed PCS services. Similarly favorable considerations obtain with respect to 2390-2400. Data-PCS devices operating in this spectrum will not be able to interact readily with licensed PCS. However, they will be easily able to readily interact with the growing number of wireless local area networks ("LANs") that use the 2400 MHz band. The 2402-2417 MHz band is not suitable for Data-PCS because of the need for costly interference avoidance technologies--principally spread spectrum. If Data-PCS communication is to be broadly

^{3/} See, Comments of the American Radio League in Response to Notice of Inquiry in ET Docket No. 94-32 at 3-4, 5 (filed June 15, 1994).

available to the American public and business users--and the benefits to be realized required this breadth of use--the cost of production of the communication devices must be tightly controlled; the inclusion of spread spectrum technology in Data-PCS would preclude this result. These considerations preclude use of the 2.4 to 2.5 GHz band for Data-PCS devices.

However, 2402-2417 MHz has proved itself well suited to the deployment of LANs. This has occurred because of the natural conceptual "fit" of local area networks as an ISM technology in a band that is dedicated to ISM use, because the use of spread spectrum entails a relatively modest percentage of total cost for these systems and because pressures on the use of spectrum for LANs in the 900 MHz band have induced LAN manufacturers to turn to 2402-2417 as the alternative. The complimentary allocation of 2390-2400 MHz for Data-PCS devices with the existing and future use of 2402-2417 for LANs thus makes possible the full realization of benefits of wireless technology for local area distribution of information.

2. Data-PCS Will Yield Enormous Benefits to the Public and the Economy. This match of spectrum with the technological and marketing characteristics of intended use assures that the promise of enormous public benefits from unlicensed Data-PCS will be realized. The core purpose of the Reconciliation Act--enacted after long and careful study and not without controversy--is to make available to the private sector spectrum having the "greatest potential for productive uses and public benefits." Reconciliation Act, Title VI, § 113(a)(5). The Commission has adapted this purpose as its decisional criterion by seeking to determine whether a particular allocation will "improve access to communications" by industry and the American public and, in that

process, create "new jobs [and] foster economic growth." NPRM at ¶ 1. It is clear that the allocations we urge upon the Commission meet this test.

By their very nature, Data-PCS devices will simplify and reduce user-cost of access not merely to communications distribution systems but, more importantly, to the information that those systems carry. The highly portable, high utility character of these devices means that they will find acceptance in virtually all sectors of our economy, including education, manufacture, transport and service industries, as well as the home. These are not toys or gimmicks, but genuine computing devices that will facilitate increased access and use of the full array of information that can be stored and transmitted in electronic form.

Because of the high degree of utility of this technology, its deployment will stimulate growth and strength across a number of sectors of the American economy. The domestic computer manufacturing industry, although one of several that will benefit from these allocations, has become a mainstay of the American economy. Companies like Compaq and its equipment manufacturing competitors are estimated to employ more than one quarter of a million people. Taken as a whole, the computer industry generates revenues of more than \$450 billion annually.^{4/}

It is not possible to measure with mathematical precision the number of unlicensed Data-PCS units that will be sold in the near term if the Commission's decision in this docket is favorable. It is fact that more than 30 million sublaptops and notebooks

^{4/} See, e.g., "Computer Industry Forecasts", Computer World, p. 107 (April 15, 1993).

have been sold in the United States in the past three years producing revenues of more than \$19 billion. Growth is expected to remain strong.^{5/} In addition to the wholly new devices that are being, and will be, developed for use in this spectrum, each and every one of the sublaptops and notebooks sold in the United States can be adapted for use in the Data-PCS environment.

The favorable economic effects of the early deployment of Data-PCS go beyond the computer equipment manufacturing industry. These devices will stimulate the conversion and adaptation of information from hard copy to electronic form, thus generating growth and jobs in the information and software industries. They will promote increased usage of existing and future communications distribution networks and, because of their symbiotic relationship, increased marketability of wireless local area network systems. And, these economic benefits do not take into account the indirect gains to the American economy that users will realize through new business opportunities, creativity and innovation, and higher productivity that low-cost, easy access to information creates.

Last, but by no means least, the early deployment of Data-PCS will make favorable contributions to the United States' balance of trade. As the result of efforts of Compaq and its competitors, of component manufacturers and software publishers, the United States has been able to retake the lead in computer development, computing technology and computing/communications applications among industrialized nations.

^{5/} See, e.g., "Sublaptop Sales to Mushroom", Computer Dealer News, p. 15 (March 9, 1994).

Because the proposed Data-PCS allocation is linked to the use of 2402-2417 MHz for LANs and because the latter use is consistent with international rules, the allocation we have proposed will facilitate the complimentary marketing of wireless LANs and Data-PCS devices abroad. This will enable the United States to maintain its competitive edge in the global information technology and information economy.

In short, on its own terms, the fit between Data-PCS and 2390-2400 MHz, coupled with the preservation of 2402-2417 MHz for ISM Part 15 applications is the “best and most valued use” of this spectrum because it promises to yield the “greatest benefit to the public.” NPRM at ¶ 8. By satisfying the long standing need for spectrum suitable for Data-PCS, the Commission can take a modest but crucial step toward full realization of the NII.

**B. The Allocation of 2390-2400 for Data-PCS
and the Preservation of 2402-2417 for
ISM Applications is Superior to the
Alternatives Before the Commission.**

Two specific alternatives to the use of 2390-2400 MHz for unlicensed Data-PCS have been advanced. It is asserted that this band (paired with 2300-2310) should be allocated for use for a “wireless local loop service” that would enable local exchange carriers to provide telephone service to the home by radio links “rather than through a copper or fiber cable.” NPRM at ¶ 13. Alternatively, it is proposed that this service be made available for an “aeronautical audio/visual service” (“AAVS”) that would furnish commercial air travelers with “real-time video and audio information and

entertainment services.” NPRM at ¶ 12.^{6/} For several reasons, these proposals are markedly inferior to the allocation we have advanced in relation to the purposes of the Reconciliation Act and basic principles of spectrum allocation. We deal with them in turn.

1. The Wireless Local Loop Proposal. The superficial attraction of this proposal is that the proposed allocation would be made available on a licensed basis and, therefore, would be “auctionable.” The benefits of auctioning this spectrum turn out, however, to be more apparent than real. If this spectrum were allocated solely for local loop purposes, it would be usable by--and only by--companies engaged in local exchange service. At the present time, throughout most of the country, that service is provided by a legally recognized and sanctioned monopolist. While that circumstance may change in the future, at present there is only one potential bidder in each geographic area of the country for this spectrum, and there is no meaningful way to auction the spectrum for this specific purpose.

The licensing of this spectrum for exclusive use without auction would not, of itself, be disabling if there were some public interest justification for it. But no such showing has been, or can be, made.^{7/} The fact is that, unlike wireless applications,

^{6/} The Commission has, in the NPRM itself, rejected other potential uses of the 2390-2400 band on grounds that “most of these uses are already accommodated in other bands ... or may not be suitable” for 2390-2400 MHz band. This tentative conclusion is plainly correct; we, therefore, limit our discussion to the two proposals which, on the face of things, can arguably contend with Data-PCS for this spectrum.

^{7/} This problem is exacerbated because of the uncertainty whether the spectrum at 2300-2310 MHz (with which 2390-2400 is to be paired) is available for immediate private sector use. See NPRM at ¶ 17.

which definitionally depend exclusively upon the use of radio spectrum, local loop service has been and can be provided by copper wire and, more recently, by fiber. Over the past half decade, the Commission has gone to considerable effort to remold its regulation of telephony in order to provide local exchange carriers with the business opportunities they claim that they need to support the installation of fiber to the home.^{8/} It is not even clear from the record that the use of radio spectrum would be cheaper to deliver the last mile than fiber or would be technologically superior to fiber. Nor is there any assurance that whatever savings might ensue from the wireless local loop proposal will be realized by consumers. The uncertain and, in any event, marginal benefits that the consumer might realize from this proposal are far outweighed by the benefits that will ensue from the allocation of the spectrum for Data-PCS.

2. AAVS. This proposal, too, suffers from the fact that the proposed use of the spectrum--assuming that it otherwise satisfies the technical specifications under the Reconciliation Act^{9/}--would be of very limited value to the economy and the public. Even assuming that there are multiple licensees for the AAVS service--which seems doubtful--the proponents of this new service contend that it will reach a maximum potential audience of 1.3 million travelers per day during a maximum of 5-6 hours per

^{8/} See, e.g., In re Telephone Company-Cable Television Cross Ownership, 7 F.C.C. Rcd. 5784, 5793 (Video dialtone will promote "rapid deployment of fiber optic networks").

^{9/} The NTIA makes very clear that the Commission should not allocate the spectrum at 2390-2400 for certain purposes: "airborne or space-to-earth links" in this band would be detrimental to Federal Government operations and "must not be permitted." See NTIA, Preliminary Spectrum Reallocation Report (Special Publication 94-27, released Feb. 9, 1994) at 4-17 ("NTIA Report"). The proponents of AAVS assert that this restriction does not apply because the proposal would entail "ground-to-air" service. Whether this distinction is valid is somewhat unclear.

day on transcontinental flights and considerably less time on shorter flights. The information flow will be one-way. Without in any way discounting the need of the traveling public for information and entertainment while in transit, the benefits of this proposed service pale in comparison to the benefits that would flow from the allocation advocated by the computer industry, in terms of improved access to communications by industry and the American public, and of jobs and economic growth both here and abroad.

It is true that both the AAVS and Wireless local loop proposals do not depend upon the preservation of 2402-2417 MHz for ISM service, whereas the marketability of unlicensed PCS operating at 2390-2400 is crucially dependent upon the continued use of that spectrum by wireless LANs. But this does not alter the relative public interest values of unlicensed PCS in comparison with the alternatives. This is so because--in addition to the symbiosis between wireless LANs and Data-PCS--there are compelling grounds to preserve intact the use of 2402-2417 MHz for ISM purposes. Although the record indicates "some disagreement" among commenting parties as to the extent to which commercial license service in this band is "incompatible" with existing and future Part 15 uses (NPRM Appendix D at ¶ 13), the Commission^{10/} and the NTIA^{11/} have both made clear that any allocation of Federal Government spectrum that disrupts

^{10/} Report of the Federal Communications Commission to U.S. Department of Commerce (Release 94-213, Aug. 9, 1994) ("FCC Report") at ¶ 39.

^{11/} NTIA Report at ¶ 3-15.

existing consumer and commercial services in this band would be “in direct conflict with the public interest.”^{12/} Thus, without regard to the conflicting claims for 2390-2400 MHz, the Commission should not consider making the spectrum at 2402-2417 available for commercial license purposes absent an overwhelming showing that this use will cause no degradation to the quality of service provided by ISM users or meaningfully limit the opportunities for new and innovative uses of this spectrum by the wireless LAN users and others who now occupy it.

Accordingly, Compaq respectfully submits that the position we and others in the computer manufacturing and allied industries have urged--to reallocate 2390-2400 for Data-PCS and preserve 2402-2417 MHz for wireless local area networks and similar ISM applications--serves the public interest as the Commission has articulated it in the NPRM and does so far better than any of the allocation “alternatives” that have been advanced.

**The Exclusion of Spectrum at 2390-2400 and
2402-2417 from Auction is Entirely Consonant
with the Public Interest.**

Compaq is aware that the computer industry’s proposal would mean that 25 of the 50 MHz the Federal Government has initially made available for reallocation would not be subject to auction. This does not, we maintain, detract from the public interest values of the proposal we have advanced. On the contrary, it merely confirms what the Commission has independently recognized: the Commission’s task is first to

^{12/} Id.

ensure that spectrum is put to its best and most valued use before it is decided whether to make it available for auction. NPRM at ¶ 9.

This approach is mandated by section 309(j) of the Communications Act which specifically proscribes the use of competitive bidding for the allocation of spectrum. In enacting Section 309(j), the Congress recognized that there is nothing about the nature of spectrum itself that dictates whether it should be made available on a licensed and, therefore, “auctionable” basis or should be retained as a “public good” available at no charge to all users. The Congress mandated that spectrum should be considered for auction only when the principal use of the spectrum will, or is reasonably likely to, involve “the receipt by the licensee of compensation by subscribers.” 47 U.S.C. § 309(j)(2)(A). The Congress also stipulated that, although yield to the Federal treasury is not a relevant allocation consideration, “consumer demand” is. 47 U.S.C. § 309(j)(7). Section 309(j) thus preserves the traditional standards for spectrum allocation under which the public interest is to be determined by the need for the service (consumer demand) and not by whether the same spectrum could, in some other application, be auctioned off.

These limitations upon the use of auctions are reflective of basic economic theory. Economic theory postulates that making spectrum available through auctions, assuming a functioning marketplace, will tend to yield efficient uses of the spectrum because the highest bidder will, necessarily, put the spectrum to uses highly valued by the ultimate consumer. Economic theory also recognizes, however, that some uses of spectrum are in the nature of “public goods” in the sense that the spectrum can be infinitely reused without diminishing its use by others for the same or very similar

purposes and that it is impossible to efficiently police these uses so as to extract a monetary value from them. Spectrum is not inherently either an auctionable commodity or a public good. Rather, the classification will depend upon the use to which the spectrum is put. It is certainly true that the unlicensed Data-PCS proposals that we endorse involves the use of spectrum as a public good. But, as we have shown, the allocation of the spectrum for this purpose will, no less than auctioning, “promote economical prices for users and provide operators with incentives to develop and introduce innovative service features and technologies.” NPRM at ¶ 9.

In these circumstances, the Commission’s invitation for comment on an allocation “approach” that would designate 2390-2400 MHz and 2402-2417 MHz for “general Fixed and Mobile Services” and to rely substantially on “market forces” to determine the use to which the spectrum is ultimately put (NPRM at ¶ 9) is misguided. To the extent that this “approach” is meant to arbitrarily force spectrum into uses that makes it subject to auction, the approach is bad public policy because it ignores the fact that spectrum can, and in some circumstances should in the public interest, be made available as a public good and that auctioning is one, but by no means the only, means of assuring efficient and intensive use. To the extent that the “approach” is designed to make auctionability a spectrum allocation criteria, it goes beyond the Commission’s power under section 309(j).

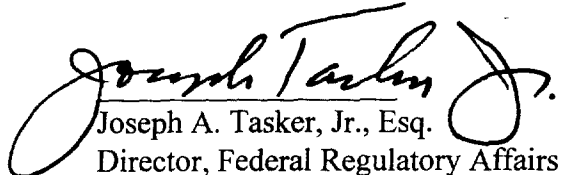
The question, then, that the Commission must address in this proceeding is not whether or how much of the spectrum being reallocated from the Federal Government should be put to uses that makes it susceptible to auction. The question is, rather, whether the proposed, competing uses are efficient and promote the public interest. The

general allocation approach suggested by the Commission fails to satisfy this test because there is simply no means of knowing whether the proposed uses that may ultimately emerge are superior to the use of the spectrum on an unlicensed basis for Data-PCS. What evidence there is suggests that they would not be. Were there important beneficial uses of this spectrum poised for implementation, it is likely that the Commission would have been advised of them.^{13/} Instead, the Commission has been presented with just two alternatives to our proposal--the wireless local loop and AAVS plans. These are demonstrably inferior to the uses that we and others in the computer industry urge; and the prospect of limited bidders and limited exclusive use in these two applications makes the use of an auction as a means of measuring value questionable. The reservation of this portion of the spectrum for uses--Data-PCS and ISM application--that do not admit of

^{13/} The Commission itself has observed that the 10 MHz bandwidth available at 2390-2400 is probably "too small" to support major, "new services" on a licensed basis. FCC Report at ¶ 32.

auction is, therefore, entirely consonant with the public interest objectives that the Commission seeks to achieve.

Respectfully submitted,


Joseph A. Tasker, Jr., Esq.
Director, Federal Regulatory Affairs
Compaq Computer Corporation
1300 I Street, N.W., 490 East
Washington, DC 20005

Of Counsel:

Ian D. Volner
William Coston
Venable
1201 New York Avenue, N.W., Suite 1000
Washington, DC 20005

Dated: December 19, 1994